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(54) Title: A SYSTEM AND METHOD FOR ACQUIRING REMOTE PROGRAMS FOR PERFORMING A TASK
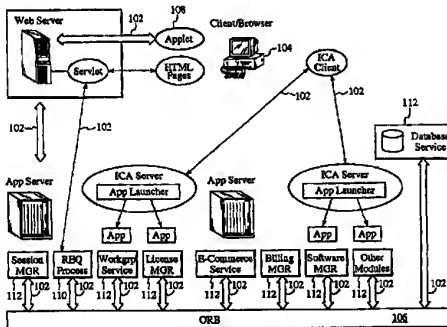
(57) Abstract

An architecture in accordance with the present invention allows users (104), from the World Wide Web (WWW) (102), to easily and securely select, configure and access the unique computing resources and applications required to perform a given task. The result is a secure, reliable, configurable and scaleable computing infrastructure that can be put together at a moment's notice, modified at will, and discarded or downgraded when no longer needed. Expenses are incurred only for the amount of computing resources and applications used; once downgraded or disbanded, recurring expenses are minimized or eliminated entirely. The architecture comprises a universally available network (the Internet) (102), servers which are proprietary and owned by third parties (Citrix Winframe and ICA) (112), and the concept of allowing the user to actually build a business object specifically suited for their needs, which in turn is physically represented by and accessible through a programmatically–generated Web page (108).

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information between those points; in fact, if properly used, it is essentially a virtual
network. However, that does not necessarily allow the firm to design a product, nor
does it give the firm a competitive advantage. Certainly a design file could be sent to
personnel or outside contract/consulting firms, but what if they do not use the same
design tools? It is cost prohibitive to purchase a copy of a tool for everyone involved,
and in fact may be cost prohibitive for the firm to purchase a single copy, if the firm is
a small one (or perhaps a startup). Even if the tools unique to the task at hand can be
provided, how is licensing addressed? Where is the data stored? Who manages the
server(s)? How is access to tools and data authorized, tracked and managed? How does
the firm accurately track the expenses incurred in providing and managing these tools?
The costs incurred in resolving these problems, whether it be financial, time, or
otherwise can be significant, and have a direct impact on a firm's ability to remain
competitive.

What is needed is a system and method to overcome the above-mentioned
problems. The present invention addresses such a need.

SUMMARY OF THE INVENTION

An architecture in accordance with the present invention allows users, from the
World Wide Web (WWW), the ability to easily and securely select, configure and
access the unique computing resources and applications required to perform a given
task. The result is a secure, reliable, configurable and scaleable computing
infrastructure that can be put together at a moment's notice, modified at will, and
discarded or downgraded when no longer needed. Expenses are incurred only for the
amount of computing resources and applications used; once downgraded or disbanded,
recurring expenses are minimized or eliminated entirely.

The architecture comprises a universally available network (the Internet),
servers which are proprietary and owned by third parties (Citrix Winframe and ICA),
and the concept of allowing the user to actually build a business object specifically
suited to their needs, which in turn is physically represented by and accessible through
a programmatically-generated Web page.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an architecture in accordance with the present invention for acquiring data.

DETAILED DESCRIPTION

The present invention relates to an improvement in acquiring remote data and program. The following description is presented to enable one of ordinary skill in the art to make and use the invention and is provided in the context of a patent application and its requirements. Various modifications to the preferred embodiment will be readily apparent to those skilled in the art and the generic principles herein may be applied to other embodiments. Thus, the present invention is not intended to be limited to the embodiment shown but is to be accorded the widest scope consistent with the principles and features described herein.

Figure 1 is a block diagram of an architecture 100 in accordance with the present invention for acquiring data. The architecture comprises:

a Network delivery mechanism 102 such as the Internet;

Client-side computer 104 including a Java-capable browser 104;

Server-side Java object request broker (ORB) 106 capable of providing object services such as (but certainly not limited to) security, transactions, relationships and licensing.

Client-side Java applets 108 capable of communicating with an ORB 106.

Request processor 110 capable of programmatically, in response to client-side requests from users, constructing dynamically extensible business objects that incorporate the required object services, and provide access to computing resources and applications unique to the user task at hand. The request processor 110 is also capable of displaying user-selected applications back to client-side platform.

The server objects 112 are capable of ensuring availability of, configuration of, extensibility of, automatic administration of, and ultimately providing access to, the computing resources and application unique to the user task at hand. The server objects 112 are also capable of providing access control, user authentication, auditing, tracking, database and billing services.

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A plurality of application servers 114 providing a plurality of application resources.

The components in this architecture are described in detail below:

Network delivery mechanism 102: using the Internet, for example, as a network delivery mechanism provides universal access. The Internet is available (though not necessarily 100% available) on a global 24x7 basis. It is accessible through multiple mediums: analog phone, ISDN, wireless, satellite and corporate intranet to name a few. By using the Internet as a virtual private network, users pay for access and usage, and minimize or eliminate network administration and infrastructure costs.

Client-side Java-capable WWW browser 104: this provides a key characteristic of the present invention: a universally used cross-platform client application such as Netscape or Internet Explorer. Web browsers of this type are available on virtually every computing platform, and are now moving into network computers (i.e. the oracle NC), "network appliances", smart phones, television (i.e. Web-TV) and a variety of other specialized and embedded applications.

Server-side Java Object Request Broker (ORB) 106: the ORB 106 is server-side middleware that provides a number of services and inter-object communication capabilities that are fundamental to the concept of allowing users to select, configure and access the unique computing resources and applications required to perform a given task. When a user defines their "toolset", what they are actually doing is building a business object specifically suited to their needs. This business object is dynamically extensible, and is comprised of a number of other objects, some of which are ORB 106 services, and some of which are server-side objects. The ORB 106 provides access to its internal services such as (but certainly not limited to) security, transactions, relationships and licensing, provides access to external server-side objects, and provides inter-object communication.

Client-side Java applets 108: these applets supply the user interface, and give the user the capability to easily and securely select, configure and access the unique computing resources and applications required to perform a given task. What differentiates these applets from a standard downloadable applet is that they provide this functionality by communicating with an ORB 106. While they give the appearance

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of performing all functionality on the client-side, the work is actually perfomed on the
server-side, by direct communication with the ORB 106, remote server-object method
invocation, or a combination thereof.

Request processor 110 capable of constructing business objects: when a
user defines their "toolset", a business object is built that is specifically suited to the
user's needs. This business object can, for example, manifest itself as the Web page
(and Java applets contained therein) through which the user gains access to the
computing resources and applications unique to their task. In order to "build" this
business object for the user, the server-side Java applications must perform (but are not
limited to) the following functions:

· Provide information on the computing resources and application available

· Provide information on the ORB services available (licensing options,
security, etc.).

· Provide information on the administration services available.

· Provide access on access control, billing and related services that are
available.

· Determine which service objects the user has selected.

· Combine all service objects into a single business object.

· Make that business object physically represented by and accessible through a
Web page.

· Store the business object to a business object data base.

·Allow the user to modify their business object at will, then update to reflect
changes.

The end purpose of the processor is to give users access to the computing
resources and applications unique to a given task (i.e. ASIC design). These
applications are numerous in number, and may be native to a specific (MS-Windows)
platform or entirely generic (Java). The key is that the application does not
permanently reside on the client, and therefore must be supplied by a server. A
system and method in accordance with the present invention provides the following
types of application servers:

Application servers 114:

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Citrix Winframe servers: these servers allow for the remote display of Windows95 and WindowsNT applications on independent computing architecture (ICA)-enabled clients. ICA is a proprietary protocol similar in concept to Windows. It requires a thin-client to be executing on the client platform in order to receive, interpret and display Windows GUI graphic objects. The thin client may be a Java or non-Java version. The ICA protocol also provides for end-to-end encryption of the ICA data stream.

Java Servers: these servers will allow for the downloading of applications written entirely in Java. Like the ICA protocol, these servers will provide for end-to-end encryption of the Java data stream.

Server objects 112 capable of providing computing resources and applications: part of the user business object comprises other objects which represent the computing resources and applications the user has selected. These objects in turn must be intelligent enough to convey to the user the information needed in order to make informed choices about the way they construct their business object; this information includes (but is not limited to) the following with respect to applications and resources:

· Verification of availability

· Version information

· Cost of usage

· License mechanism

· Security options (i.e. is encryption of a data stream available?)

Server-side Java objects 112 capable of providing access control and administrative services: part of the user business object consists of other objects which represent the access control and administrative services the user has selected. These objects in turn must be intelligent enough to convey to the user the information needed in order to make informed choices about the way they construct their business object; this information includes (but is not limited to) the following with respect to these services:

· Access control (time constraints, approved user list, inter-company workgroups)

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· Authentication (method used)

· Auditing

· Usage tracking and profiling

· Billing services

5   · Individual or corporate information

An architecture in accordance with the present invention allows users, from the World Wide Web (WWW), the ability to easily and securely select, configure and access the unique computing resources and applications required to perform a given task. The result is a secure, reliable, configurable and scaleable computing

10   infrastructure that can be put together at a moment's notice, modified at will, and discarded or downgraded when no longer needed. Expenses are incurred only for the amount of computing resources and applications used; once downgraded or disbanded, recurring expenses are minimized or eliminated entirely.

The architecture comprises a universally available network (the Internet),

15   servers which are proprietary and owned by third parties (Citrix Winframe and ICA), and the concept of allowing the user to actually build a business object specifically suited to their needs, which in turn is physically represented by and accessible through a programmatically-generated Web page.

Although the present invention has been described in accordance with the

20   embodiments shown, one of ordinary skill in the art will readily recognize that there could be variations to the embodiments and those variations would be within the spirit and scope of the present invention. Accordingly, many modifications may be made by one of ordinary skill in the art without departing from the spirit and scope of the appended claims.

CLAIMS

1.   1.   A system for acquiring remote programs for performing a task comprises:
2.   a public network;
3.   a web server for receiving information from and transmitting
4.   information to the public network;
5.   at least one client computer capable of accessing the public network via
6.   the web server;
7.   a plurality of application servers for receiving information from and
8.   transmitting information to the public network;
9.   a request processor located within one of the plurality of application
10.   servers for passing requests between the plurality of application servers and the client
11.   computer; and
12.   an object request broker responsive to requests from the client computer
13.   for providing access to computing resources of the application servers.

1.   2.   The system of claim 2 wherein the client computer includes a browser.

1.   3.   The system of claim 2 wherein the public network comprises the internet.

1.   4.   The system of claim 3 wherein the request processor is capable of constructing
2.   business objects suited to a user's needs.

1.   5.   The system of claim 4 wherein the plurality of application servers comprise
2.   server objects.

1 6. The system of claim 5 wherein a portion of the plurality of server objects are
2 capable of providing computing resources and applications.

1 7. The system of claim 6 wherein a portion of the plurality of server objects are
2 capable of providing access control and administrative services.

1 8. A system for displaying user selected applications on a client computer in a
2 public network comprising:
3   a plurality of applications servers;
4   a request processor within one of the application servers for processing
5 requests between the plurality of application servers and the client computer;
6 and
7   an object request broker which communicates with the plurality of
8 application servers responsive to requests from the client computer.

1 9. A system for brokering requests from on a public network comprising:
2   a client computer coupled to the public network;
3   a plurality of application servers coupled to the public network;
4   a request processor within one of the application servers for receiving
5 requests from and transmitting information concerning requests to the client
6 computer; and
7   an object request broker for providing access to internal services within
8 the application servers based upon requests from the client computer.

1 10. A system for constructing business objects in a public network comprising:
2   a client computer coupled to the public network; and
3   a plurality of servers coupled to the public network; the servers

4   including

5   a plurality of applications; and

6   a request processor within one of the application servers for processing

7   requests between the plurality of application servers and the client computer; wherein

8   the applications build a business object based on the user need.
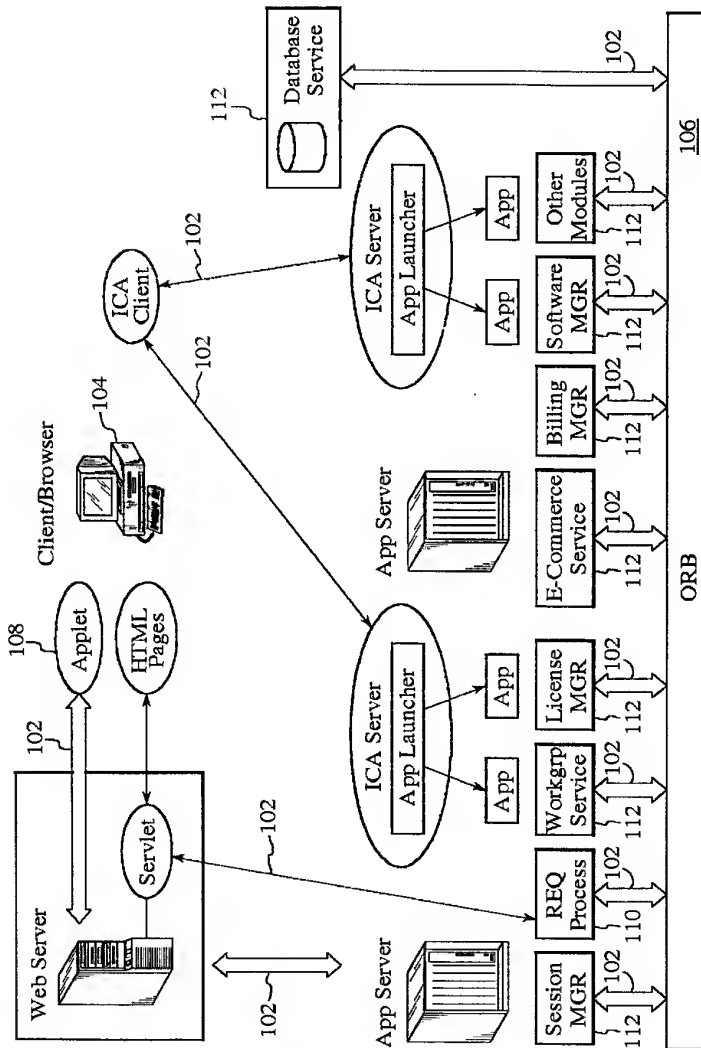
INTERNATIONAL SEARCH REPORT	International application No.
	PCT/US98/22581

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06K 7/00; G06G, 7/06;

US CL : 395/200.48, 200.49, 200.33, 651; 705/42, 43, 44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/200.48, 200.49, 200.33, 651; 705/42, 43, 44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, 5,347,632 A (FILEPP et al.), 13 September 1994, See Abstract, Column 2, lines 1-16	1-10
EA	US, 5,835,712, A (DUFRESNE et al.), 10 November 1998, See Abstract, Column 2, Lines 1-13	1-10
A	US, 5,815,665 A (TEPER et al.), 29 September 1998, See Abstract, Column 2, Lines 1-28	1-10
A	US, 5,826,244, A (HUBERMAN et al.), 20 October 1998, See Abstract, Column 2, Lines 1-19	1-10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 JANUARY 1999	04 MAR 1999
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer STEPHANIE D. HICKS
Facsimile No. (703) 308-5357	Telephone No. (703) 305-3863

Form PCT/ISA/210 (second sheet)(July 1992)★

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS

search terms: building, blocks, components, internet, WWW, browser, application, request, public, remote, system, server, client